BEADED CRIMP LID FOR IMPROVED CONTAINER SEAL

Field of the Invention

[001] The present invention relates generally to a crimped lid for a pressurised container, and more particularly to a lid, beaded for evenly distributing the pressure load in a sealed container.

Background of the Invention

[002] In particular aspects of the invention, the lid is intended for use on containers for the packaging, storage and transportation of flowable materials.

[003] One requirement of a pail lid is to withstand a pressure differential between the interior and exterior of a lid sealed container. The extent of such a pressure differential depends on the contents of the container and environmental conditions.

[004] Any differential in pressure results in stress being applied tangentially to the surface of the container lid. In turn, this stress induces a strain in the lid, resulting in creasing. Lids typically crease in a non-uniform, random manner. This random creasing can quickly lead to a loss of the required sealing, where the crease forms near the perimeter of the lid.

[005] What is needed, therefore, is a lid that distributes strain creasing uniformly across the lid, thereby maximising the threshold of stress that causes loss of the required seal.

Summary of the Invention

[006] It is an object of an aspect of the invention to provide a lid that distributes strain creases uniformally across the lid.

[007] In a corresponding embodiment of the invention, there is provided a lid for sealing a container. The lid has a set of evenly spaced radial beads. Strain creases are predisposed to form along these beads. Since the beads are distributed evenly, the strain creases distribute evenly. As a result of this

balanced distribution, the sealed container will exhibit a higher threshold for a loss of seal.

Brief Description of the Drawings

[008] A preferred embodiment of the present invention will now be described, by way of example only, with reference to the attached Figures, wherein:

Figure 1 is an exploded perspective view of a prior art crimped lid and container;

Figure 2 is a perspective view of a prior art crimped lid sealed to a container and exhibiting strain creases;

Figure 3 is a plan view of a beaded crimped lid according to the preferred embodiment of the invention; and

Figure 4 is a perspective view of an inventive beaded crimped lid sealed to a container and exhibiting strain creases along the beads.

Detailed Description of the Invention

[009] Turning to Figure 1, a container 100 and lid 110 of the prior art are shown. The container 100, preferably, has a lip 120. The lid preferably includes crimping 130 at the lid perimeter. The crimping 130 cooperates with the lip 120 when the container 100 is closed with the lid 110. The cooperation is such that lip 120 and crimping 130 form a seal. The seal prevents the exchange of gas or flowables between the interior and exterior of the closed container 100.

[010] Turning to Figure 2, a container 200 of the type described in Figure 1, is shown with a closed lid 210. The crimping 230 is mated to the lip (not visible). In this container 200, a positive differential in pressure exists in the interior of the container 200. The resultant stress has strained the lid 210 and occasioned strain creases 240 in the lid. The creases 240 form in unpredictable random patterns.

[011] A severe crease ultimately leads to loss of sealing when the force of the crease is sufficiently high. The unbalanced pattern of creases results in one crease of greater force. Thus, loss of sealing may occur corresponding to a given strain, where, if the crease forces were evenly distributed, no loss of sealing would occur.

[012] Where the crease forces are balanced, the lid, therefore, sustains greater strains, and therefore, a higher differential in pressure, before losing sealing.

[013] Turning to Figure 3, an improved lid 310 is shown having a crimped edge 330 for cooperatively sealing a container. The lid 310 has radial beads 350 spaced evenly around the lid 310.

[014] The improved design of lid 310 operates to geometrically balance creases about the lid 310, and thus balance the crease force. This maximizes the sealing pressure threshold.

[015] Turning to Figure 4, a container 400 of the type described in Figure 1 is sealed with a lid 410 of the type described in Figure 3. As Figure 4 shows, a differential in pressure has caused the lid 410 to expand upwardly. Creases 440 have formed partially coincident with the beads 450 (i.e. the creases 440 naturally form in the beads 450). The creases 440 are distributed evenly, and therefore are subject to substantially identical forces.

[016] The manner in which the beads are formed in the 410 lid is not pertinent to the invention. As an example, the beads 450 may be stamped in the lid 410.

[017] The material of the lid 410 is also not pertinent. Plastic or metal are envisioned by way of example. Plastic container/lid pairs using beads may be expected to withstand 100 kPa of pressure differential.

[018] The cross section of bead 450 also is not pertinent. Any cross section useful in attracting creases 440 as they form is acceptable. By way of example, a channel is envisioned.

[019] It will be appreciated that, although embodiments of the invention have been described and illustrated in detail, various modifications and changes may be made. Different implementations may be made by those

familiar with the art, without departing from the scope of the invention as defined by the claims appended hereto.